

Applicant has amended claims 4 and 9 to better define the invention. Such amendments can be found in the claims attached hereto. The applicant has also amended the drawings by making amendments to the drawings and submitting a new set of drawings. Each drawing sheet is entitled with "replacement sheet".

In the office action, page 4, under "Claim Objections", it is believed by the applicant that the Examiner intends to state "Claims 4 and 9...", not "Claims 3 and 9".... Based on this assumption, the applicant has amended claim 4. Also, in the following line, the Examiner states"...regarding claim 3, --external threads--...", it is believed by the applicant that the Examiner intends it to read "...regarding claim 4, --external threads--...". Based on this assumption, the applicant has amended claim 4.

Turning to the rejection of claims 4, 8, and 9 under 35 USC 112, first paragraph, the applicant has amended the claims and it is believed that this rejection has been overcome by the amendments.

The Examiner has rejected claims 4, 8, and 9 under 35 USC 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The applicant has amended the claims. It is believed that the amendments overcome this rejection.

Turning now to the rejection of claims 4, 8, and 9 under 35 USC 103(a) as being unpatentable over Nienke, U.S. 2,900,196 in view of Scheublein Jr. et al, U. S. 3,103,377, the applicant disagrees with this rejection.

Ball joints play an important, yet often misunderstood, role in how a car handles. Damage one, even slightly, and the car's performance will suffer. A ball joint is critical to a car's handling. Ball joints maintain all of the suspension alignment as the car corners. A bent ball joint certainly alters the caster and camber setting for the car, resulting in erratic handling. Depending on how much it is bent, as the tire and wheel goes through its suspension travel, the caster and camber will vary plus or minus.

Thus, drivers, especially race drivers, must frequently visually inspect the ball joints for the bend or some other malady. This requires the removal of the ball joint stud from the spindle and rotation. If during rotation, it wobbles, it's bent. OEM ball joints such as those found in

Ninke and Scheublein were never meant to take the high lateral loads found in racing. The OEM balls unseat with the side load found in a racing application.

Thus, it is highly beneficial to have a ball joint that is easily taken apart and put back together. Not only can the driver check for damaged ball joints, but the adjustment in camber and caster can be done by exchanging the ball joint to a larger or smaller ball joint, or to a longer or shorter ball joint. That is, the ball joints of this invention are multiple purpose ball joints in that they are not designed for only one type of automobile, such as the ball joints of Nienke and Scheublein.

Both Nienke and Scheublein are 1958 patents, that is, fifty years old, which means they teach fifty year old technology. In an effort to show that the ball joints of the instant invention would not be obvious over these two references, the applicant has enclosed pages from an automotive magazine, namely, Dick Berggren's Speedway Illustrated, certainly a magazine dedicated to the racing field and certainly containing the suggestions and opinions of those skilled in the art.

The applicant would direct the Examiner's attention to pages 76 and 77 of that publication. Bearing in mind that Howe Racing Products is the owner of the invention claimed in the instant application, the Examiner should read the bottom of the first column by Doug Gore, in which he states "During the turn of the century Howe Racing Products achieved a discovery that changed the design of racing ball joints forever." The Examiner should continue to read the story and note the comments by Chas Howe of Howe Racing Products when he states "When working with the new radial tires, our data acquisition systems told us we were getting an abrupt camber change in the middle of the corners. When we test loaded the car in the shop, we discovered that the upper ball joints were unseating. At that time, the joints had springs that maintained pressure on the race and the tires produced such great cornering loads that the balls overpowered the springs." Further, the article goes on to state "Howe's new, low friction ball joints along with a competing Federal Mogul design marketed exclusively by CV Products, quietly became the norm in stock car racing's top levels." These statements by those skilled in the art very clearly show that the invention disclosed and claimed herein is new and novel and would not be immediately obvious from the cited prior art.

With specificity, the Nienke ball joint is eccentrically held so it can be adjusted for castor and camber. The housing is threaded into the lower control arm and cannot be so adjusted, only the ball per se can be adjusted for camber and castor. Control arms in today's automobiles are different than in the 1950's. Nienke teaches only one length of ball while the instant invention provides different lengths, it being common for a race car driver to have a set of 6 or 8 different lengths and sizes of ball joints. The ball joint affects charge roll center and camber gain and the height. With the ball joint of the instant invention, one can make all kinds of adjustments because one can change the ball studs very easily by removing a small set screw. Normally one has one ball stud that fits one control arm. There is no provision in Nienke for replacing parts. In the event of damage or wear, one has to throw away the stud and the control arm.

Scheublein does not support Nienke in that Scheublein's device is a two piece stud. It is adjustable by adjusting a jamb nut and drawing the ball stud in one direction, but one can only take the "slop" out of the ball joint by this means. One cannot make the tight fit on both top and bottom of the ball that the device of the instant invention can do. There is a very fine line between running free and tight versus "sloppy".

The device of Scheublein is assembled such that it stays together and cannot be easily disassembled, and the ball studs are not interchangeable. In the Scheublein device, the grease that is used only lubricates, it does not provide pressure on the ball per se.

Thus, the combination of Nienke and Scheublein does not make the instant invention obvious.

Turning now to the rejection of claims 4 and 9 under 35 USC 103(a) as being unpatentable over Scheublein, Jr. et al, U.S. 2,954,993 and Maughan, U.S. 5,564,853, the applicant disagrees with this rejection.

All of the remarks set forth above for Scheublein are incorporated herein. In addition, the Examiner combines Maughan '853 to support the rejection. Maughan '853 uses compressed surfaces to hold the ball stud, and the ball stud is crimped into place (See Figure 1 to 5), the Maughan '853 device is crimped from the ball, (see figures 6/7). Thus, it differs substantially from the device of the instant invention in that the ball studs of the instant invention are easily changed and exchanged.

Also, the device of the instant invention is self adjusting according to its use as described Supra. One does not want compression set as it makes the fit too tight and some free movement should be the norm. The Maughan device uses a spring for compression and thus the Maughan device suffers from the problems with unseating of the spring as is set forth above.

The Examiner has rejected claim 8 under 35 USC 103(a) as being unpatentable over Scheublein, Jr. et al., U.S. 2,954,993, and Maughan, U.S. 5,564,853, as applied to claim 1 and further in view of Maughan et al., U.S. 5,885,022

All of the remarks set forth above for Scheublein and Maughan '853 are incorporated herein. In addition, it should be noted by the Examiner that Maughan '022 requires plastic for all ball studs and the instant invention is made entirely of metal. Note line 1 of claim 9. In addition, Maughan does not teach anything about being able to easily disassemble the device therein.

This combination does not seem to make the claims of the instant invention obvious.

Thus, the instant invention comprises a metal ball joint containing a one-piece ball stud with a truncated flat face on the ball, that has a retaining member for the ball and which uses a lubricant to provide pressure on the ball, wherein the retaining member is easily disassembled and the ball studs are interchangeable to provide for adjusting the steering on an automobile. The cited references in any combination do not provide teachings that would make the instant invention obvious and the rejections should be withdrawn.

The applicant respectfully requests that the examiner withdraw all of the rejections and allow the claims to issue.

Respectfully submitted,


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